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Oregon Agricultural College

Experiment Station

The Hop Red Spider

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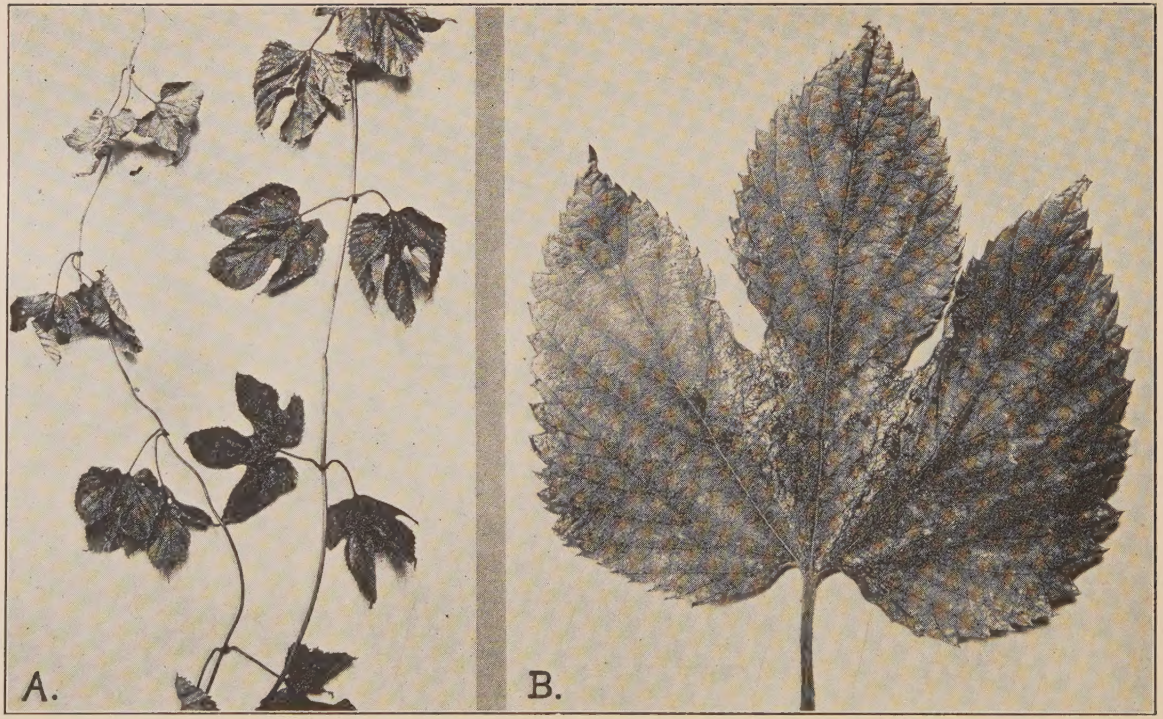

Fig. 1. The Hop Red Spider. Typical appearance of red spider injury on hop foliage.

The Hop Red Spider

The red spider-mite may, under favorable circumstances, develop as a major pest on hops, causing serious injury through its attack on the foliage.

Description. The infested foliage is of a pale green or yellowish color, blotchy and crumpled in appearance, evidently devitalized and unthrifty. An examination of the under-side shows numerous, minute spider-like creatures, yellowish or greenish in color, moving about over fine gauze-like webs.

Life-history and Habits. The winter is passed mostly as active mites on low-growing vegetation about the hop fields. Plants of the clover and violet group are favorite winter hosts. As spring advances the spider-mites migrate out into the field. Their development at first is very slow because of low temperatures and moisture which are harmful to them.

As the season advances the red spiders collect on the under-surface of the hop leaves, spin fine webs over the surface, and lay their little spherical eggs in the web. Reproduction is more or less continuous all summer long, the broods overlapping so that they are indistinguishable.

The mites have needle-like mouth parts with which they pierce the leaf tissue. The puncture causes bleeding and the mites feed on the sap.

The red spiders tend to congregate at first on the lower leaves. Often the numbers are sufficient here to cause conspicuous injury before the mites migrate to the upper foliage to any extent.

The Injury. The first injury is usually in the form of small, pale specks over the surface of the leaves. As the injury increases, these specks tend to blend one with the other, giving the foliage a pale green or yellow appearance. More or less buckling of the foliage occurs and the vines begin to look unthrifty and devitalized.

Control. Low temperatures and moisture are very detrimental to red spiders. Ordinarily they occur in very small numbers during the spring or until higher temperatures prevail and rains are less frequent. High temperatures and drouth are ideal for the development of red spiders and in a season of prolonged drouth, accompanied by high temperatures, as occurred in 1922, the hop red spider may be expected to develop in abnormal numbers.

Sulfur in some form is the standard control for red spider-mites. Sulfur dust might be effective if temperatures were high and the mites had not spun their webs too effectively. In general a liquid spray is used.

Spray No. I.

Commercial concentrate lime-sulfur	2 gallons
Calcium caseinate (orchard spreader)	½ pound
Sulfur (sublimed or dusting sulfur)	5 pounds
Water to make	100 gallons

Mix the caseinate and powdered sulfur thoroughly. Add water slowly, working the mixture into a thin, homogeneous paste. Pour the

commercial lime-sulfur in the spray tank and add water. As the tank is filling, add the sulfur paste, pouring it through a strainer to remove lumps. Make up to 100 gallons.

This is a good standard red spider spray, and where outfits are fitted with agitators should give excellent control. Where no agitator is present, or if the agitator is poor, it is difficult to keep the sulfur in solution. In such a case use Spray No. II.

Spray No. II.

Mixture No. 1.

Concentrated lye	15 pounds
Sulfur (powdered)	18 pounds
Water	20 gallons

Mix the lye and sulfur thoroughly. Place in a fairly large wooden barrel. Make a little funnel-shaped depression in center of mixture and pour in one pint of water. Mixture will begin to cook. Gradually stir and add water until all of material has liquefied. Add remainder of twenty gallons of water.

Mixture No. 2.

Calcium caseinate (spreader)	4 ounces
Sulfur (sublimed or dusting sulfur)	10 pounds

Mix thoroughly and add water slowly, working into smooth, thin paste.

Add mixture No. 2 to Mixture No. 1. This constitutes the *Stock solution.* In spraying use

Stock solution	1½ to 2 gallons
Water	100 gallons

This is a powerful spray. Examine the foliage occasionally when spraying (going back over sprayed areas) for evidence of burn. A slight burn is of little consequence. Where the burn is serious reduce the amount of the stock solution used in the 100 gallons of solution.

Stripping the lower leaves, where infested, will often delay to a marked degree the serious infestation of the main hop vine.

The destruction of the vegetation about the field by burning, plowing, or the use of a weed killer or crude oil during the late winter or spring will do much to keep down the red spiders.